Radioactive News

For Radioactive Material Licensees in North Dakota

North Dakota Department of Health

Volume 2, Issue 2 **September 1, 2000**

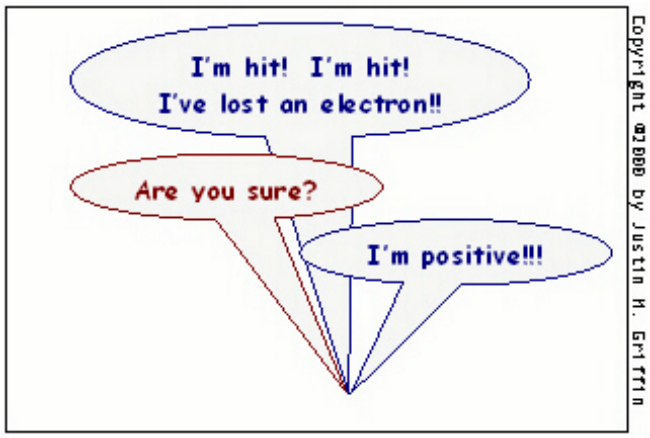
Division Name Changed; New Director Appointed

Effective March 1, 2000, the Division of Environmental Engineering became the Division of Air Quality. The name change was made to provide a better description of the actual scope and oversight of the division. The new director of the division of Air Quality is Jeff Burgess, P.E. Jeff assumed the duties and responsibilities of division director from Dana Mount on Dec. 1, 1999. More information about Jeff appears on page 2 of this issue.

Radiation Control Program staff in the area of licensing and inspection of radioactive material has not changed. Our contact information remains:

Radiation Control Program
North Dakota Department of Health
1200 Missouri Ave. Box 5520
Bismarck, N.D. 58506-5520

Phone: 701.328.5188 Fax: 701.328.5200



The Tragedy of Atomic Warfare

Inside This Issue

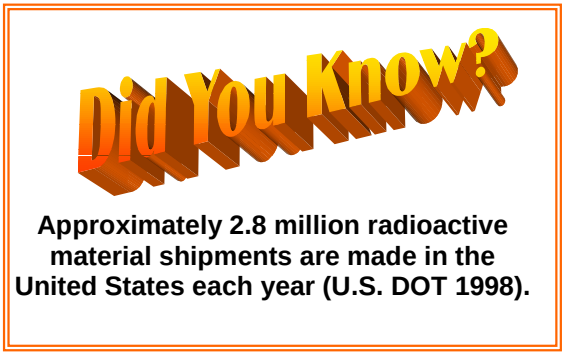
SI Units in Radiation Safety

Amount of Radioactive Material:

OLD (Curies)		NEW (Becquerels)
1 ρCi	=	37 mBq
27 ρCi	=	1 Bq
1 ηCi	=	37 Bq
27 ηCi	=	1 kBq
1 μCi	=	37 kBq
27 μCi	=	1 MBq
1 mCi	=	37 MBq
27 mCi	=	1 GBq
1 Ci	=	37 GBq
27 Ci	=	1 TBq

SI Unit Prefixes:

Symbol	Term	Factor
ρ	pico	1×10^{-12}
η	nano	1×10^{-9}
μ	micro	1×10^{-6}
m	milli	1×10^{-3}
k	kilo	1×10^{3}
M	mega	1×10^{6}
G	giga	1×10^{9}
T	tera	1×10^{12}



Approximately 2.8 million radioactive material shipments are made in the United States each year (U.S. DOT 1998).

Jeff Burgess Named Director of Air Quality

Jeffrey L. Burgess, P.E., comes to the Division of Air Quality from the Environmental Health Section Chief's Office where he served as a small business ombudsman, quality assurance coordinator for the Petroleum Products Testing Program, emergency response coordinator and pollution prevention coordinator.

Prior to his work in the section chief's office, Jeff served as the Hazardous Waste Program manager and the Radiation Control Program manager. Jeff has been employed with the Department of Health for 23 years.

Jeff has a bachelor of science degree in civil engineering, a master of science degree in environmental engineering and is currently enrolled in the master of public administration program at the University of North Dakota.

If you have questions, concerns or comments regarding radiation safety or other environmental issues related to air quality that you would like to address to Jeff, you may contact him at 701.328.5188, or by email at jburgess@state.nd.us.

Radioactive News is a publication of:

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Murray Sagsveen, State Health Officer
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Back Issues, Address Updates & Subscriptions

If you missed a previous issue of *Radioactive News*, back issues may be obtained by contacting the department. Electronic versions of the newsletter are available in Adobe Acrobat format at the Radiation Control Program website. Go to: http://www.health.state.nd.us/ndhd/environ/ee/rad/materials.htm.

To change your mailing address or to request an additional free subscription of *Radioactive News*, please call Justin at 701.328.5188, or send an email to jgriffin@state.nd.us. Questions or comments regarding this newsletter or radiation safety are always welcome.

If you wish to cancel your free subscription and no longer wish to be listed on the *Radioactive News* mailing list, simply call or send an email to Justin as mentioned above and you will be removed.

Licensing & Inspection Fees

Chapter 33-10-11 of the North Dakota Radiological Health Rules discusses the fees associated with maintaining a radioactive material license in North Dakota.

Annual fee amounts vary depending upon the type of licensed activity. These fee amounts are outlined in appendix A of Chapter 33-10-11. All license fees are due January 1st of each year the license is active.

There is no fee associated with a license renewal, nor is a fee assessed for routine inspections. A fee may be required for a "non-routine" inspection conducted by the Radiation Control Program as stated in the North Dakota Radiological Health Rules.

Companies or individuals entering North Dakota under reciprocity from another jurisdiction also must pay the appropriate licensing fee for the type of proposed use in the state. Reciprocity fees are equivalent to the annual fees stated in appendix A of Chapter 33-10-11.

Violations & Penalties: Don't Let This Happen to You

Radioactive material licensees face important responsibilities everyday. Numerous regulations exist to protect radiation workers, the public and the environment. Noncompliance with established regulations discovered during inspections performed by regulatory agencies often result in citations, violations and/or penalties. It is hoped that by reviewing the following violations and penalties, extra care will be taken in maintaining your radiation safety program while performing your licensed activities. Examples of violations and associated penalties assessed by the U.S. Nuclear Regulatory Commission appear below:

- ★ Unauthorized alteration and repairs to an irradiator and safety system resulted in a civil penalty of $10,500.
- ★ Failure to test a sealed source (containing approximately 31 millicuries of Strontium-90) for leakage at proper intervals resulted in a civil penalty of $2,750.
- ★ Deliberate violations of license conditions that require annual radiation safety refresher training for radiation workers and annual audits of the radiation safety program resulted in a civil penalty of $5,000.
- ★ Overexposure to a radiographer resulted in a civil penalty of $16,000.
- ★ Possession of licensed radioactive material without a valid license resulted in a civil penalty of $5,500.
- ★ Deliberate failure to amend the license following a change of address resulted in a civil penalty of $1,000.
- ★ Apparent willful failure to lock the sealed source in the shielded position following a radiographic exposure, failure to conduct an adequate survey of the source guide tube and failure to wear an alarm ratemeter resulted in a civil penalty of $8,000.
- ★ Deliberate failure to obtain the signature of the physician authorized user on a written directive before administering greater than 30 microcuries of I-131 to a patient resulted in a civil penalty of $2,500.
- ★ Failure to control and maintain constant surveillance of licensed materials (molybdenum-99/technetium-99m generators) resulted in a civil penalty of $2,750.
- ★ Failure to file for reciprocity resulted in a civil penalty of $2,750.
- ★ Failure to decommission the facility following expiration of license resulted in a civil penalty of $5,500.
- ★ Failing to: limit occupational exposure, have a radiation survey instrument, conduct radiation surveys, utilize personnel monitoring equipment, and failing to complete and maintain required records resulted in a civil penalty of $17,600.
- ★ Deliberate failure to allow use of nuclear gauge without proper certification and dosimetry resulted in a civil penalty of $2,750.
- ★ Deliberate use of licensed material at an unauthorized location resulted in a civil penalty of $4,000.
- ★ Falsification of records for daily surveys resulted in a civil penalty of $2,500.
- ★ Unauthorized disposal of sealed sources resulted in a civil penalty of $4,400.
- ★ Failure to properly block and brace a package of radioactive material and failure to maintain constant surveillance of licensed material resulted in a civil penalty of $2,750.
- ★ Failure to secure, limit access to, or maintain constant surveillance of licensed material stored in the Civil Engineering Building and four research laboratories resulted in a civil penalty of $2,750.
- ★ Failure to monitor employee thyroid burdens and provide adequate training in this area; and the loss of an iodine-125 seed, failure to perform an adequate survey in an attempt to recover the missing seed, and failure to notify the NRC of the loss of the material resulted in a civil penalty of $5,000.

Radiation Safety for Non-Radiation Workers

Groups of non-radiation workers – such as custodial, clerical, maintenance, laboratory and other ancillary personnel – whose duties may require them to work in the vicinity of radioactive material or x-ray machines sometimes do not receive proper hazard awareness training. The objective of this article is to remind radiation safety program managers about the importance of having well-trained non-radiological personnel and to provide basic information about an effective hazard-awareness instruction program for non-radiation workers.

In accordance with applicable regulations, information to be covered in a hazard-awareness instruction program includes the following topics:

- *Hazard Identification.* Workers should be able to identify potential radiation hazards by recognizing the radiation symbol, and to understand the potential risks and health effects.

- *Basic Protective Measures.* Workers should be instructed about basic protective measures such as time, distance and shielding; and instructed to consult with qualified personnel before handling any labeled materials or entering areas posted with the radiation symbol.

- *Emergency Response Procedures.* Workers should be instructed about the proper response to emergencies (i.e., personal injury, spill, flood or fire in a controlled area). Emergency phone numbers should be posted at all controlled areas. These postings and phone numbers should be identified during the training and be easily identifiable in the controlled area in the event of the emergency.

The following recommendations can be used to develop an effective hazard-awareness program. Readers are encouraged to complement these recommendations and supplement them as needed to suit specific situations:

1. Perform a needs assessment. Prior to developing your program, obtain information about the background, knowledge and attitude of the targeted personnel. Determine what key information needs to be covered (consider regulatory requirements and group-specific activities) and tailor your brochure and/or presentation accordingly.

2. Break the material into sections. It is important to present your materials in a simple and well-organized manner so that it is easily understood by non-technical personnel.

3. Be as group-specific as possible. Customize your instruction by adding examples and case studies that are specific to the trainees' work group. Trainees want to see themselves and their needs, problems, challenges and concerns reflected in the training.

4. Remember reference tools. If your instruction is in the form of a presentation, remember that within two weeks of the session, trainees forget about 90 percent of what they heard. Giving them reference materials (such as a brochure) ensures that they will be able to use the information well into the future.

If you have questions or need advice about establishing an effective hazard-awareness training program for your non-radiological personnel, please contact the Radiation Control Program at 701.328.5188.

References:

Michel, R.; Simpson, S.A.; Effective Radiation Safety Training. RSO Magazine 3:3:24-27; 1998.

U.S. Nuclear Regulatory Commission. Federal Register. 10 CFR Parts 19 and 20. Washington, DC: U.S. Government Printing Office; 1997.

U.S. Occupational Safety and Health Administration, Department of Labor. Federal Register. 29 CFR Parts1910. Washington, DC: U.S. Government Printing Office; 1997.

Blast from the Past

"Current cost and safety estimates are promising for digging a sea-level canal with nuclear explosives. Clearly there are uncertainties, but none appears prohibitive."

(Lt. Col. E. Graves, US Army Corps of Engineers, 1964)